Notebook Series -- Pocket Notebooks
Notebook, PN-18-09-10.1

The dated entries in this pocket notebook are from September and November 1918. The book was used by Edison to record ideas about experiments to be tried and other tasks to be performed. Some of the experiments were conducted at the garage at Glenmont, Edison's home in Llewellyn Park, New Jersey. There are numerous entries pertaining to storage batteries and Lalande primary batteries, including chemical experiments involving copper, nickel, bismuth, lithium, and zinc. There are also notes on disc record production, along with some entries that were copied from published sources. In addition, there is a drawing of a receiving device for submarine detection, with a notation that it "should go in war book" (PN-18-09-10.2). Among the employees mentioned in the book are Peter C. Christensen, Charles T. Dally, William W. Dinwiddie, and Ludwig F. (Louis) Ott. The pages are unnumbered. Approximately 160 pages have been used.

PN-18-09-10.1
E-1697

☆2996

Sept 10 1918

Sept 10th 1918

Make some pure crystal. Bi
Wash & put in 2 lbs KHO.
Li heat & then put Zinc
in sol & see if Bismuth comes down
Bismuth,

2 Off rip up a 1/2 grid
with Nickel & Coulombing
Bismuth Water cooled
make then a large
Nickel sheet & make
NiCl, & make & cause
it to coat the Bismuth
to deposit on the Nickel
sheet dissolve off Bi
& Repeat, ~~Hire b~~ & repeat,

See if Zinc replaces
Sol in Potash water
if less with Mercury
K –

[59]

Sulfide of Lead formed for Anode goes to PbO_2 by Current. Strongly Lead All in sulphuret of K. Storage. Try def Electrolyte, Pb Sulfide anode is a conductor with S reduces PbO_2 ??

to remove Copper, from Nickel plating bath in electrolyte Na — also use Current, also ground off — turn off —

good. Faraday 2nd Vol p56

Sulphide of K. platinum & Copper, powerful Current Current permanent, as the Zn Sulfide formed is sol in the Sulfide of K —

Now use peroxide of lead PbO_2 have a flashing protosulfide ~~is used~~ ~~or yellow sulphuret~~.

yellow sulphuret is meant

Faraday say PbO_2 ok in yellow sulphide of K

~~ok~~

For storage etc use flour Zinc pressed in Zinc or Hg tubes

Using solution in which $Zn(OH)_2$ is insoluble, —

Zinc possibly slightly amalgamated — Use Zinc tubes for Export.

Peroxide lead is capable
but by fusing PbO with Chlorate
K below Red
by fusing Pb for considerable time
with KOH.

When Acetate or Nitrate lead
Electrolyzed, lead deposits on
Cathode. Peroxide on anode.
Ditto fused Sulphide lead
in Sulphide K - and do.

PbO2 dont combine with acids

a plumbate of lime can be
made, acids free the PbO2

Chloride of lead Compound

Cassel Yellow
Turners Yellow

Protosulphide lead
Mix S with heated lead
Strips of lead burn in S vapor
Melting lead & plumbing (before)
Heating proto ox pb with
Sulphur
PbS melts at strong red heat
Volatilizes at strongest heat &
sublimes red compared of kept
from air
If PbS quickly reduced and
gives off most its S.
PbS is insoluble in Alkalis or
Alkali Sulphides —

In forming blanks use
thin 003 sheet Zn + strip
by Cerium —

Spun glass so its fine so sticky
breaks up so it like flock
When diluted ½ off of glycerine
Must heat in steam & moved
Articles to replace
Rubber in storage battery
Mills Cameron Resin -

Acrolein acts violently
on Urtine form yellow
moderate amorphous Solid

Candies made by
action of K Sulphide on
glycerine

Formaldehyde is produced
by dry distillation of
Calcium formate. It could
put this to Practical, also

use instead of formaldehyde
being Cheaper

Alkaline Solutions of
Lead oxide is given
by alkalinoids of
Chromic, Stannic,
Antimonous & Arsenous
oxides; the acid
Combines with the lead

Chromic Oxychloride
acts with violence
on Benzol producing
Resins

CWJ

Dichlorhydrin heated with alcoholic Ammonia yields Ammon Chloride & Chlorhydrin imide

White amorphous mass insoluble alcohol Ether Concentrated even boiling Sulphuric, aqua regia or Strong Caustic Potash

In hot water at length up Enormously yields a perfectly transparent jelly

9 mol Ammonia 4 Dichlhyd & alcohol contains 4 % of ammonia

Watts Dic 2nd ed p 318

Chromate Baryta insol in KOH,
ditto Bismuth
" lead & little cat.

Have foreman at Lewisham growing select 4 oz samples full kinds Lewisham shavings
Must look dif in growing & test for Lithia & Strontia?

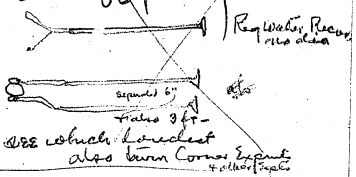
Glyoxal, prod
is an Aldehyde
pass HCl Condensation
it to a solid insol
in something
Cheap made for colour
Nitric acid on Ethyl alcohol
This may best condensate the colloid.
Glyoxal is a viscous amorphous substance

Phthalic Aldehyde
Alcohol Sol mixed with
Alcohol Sol K Cy. gives
Amorphous ppt 1/10" Cond
Apolymerides unknown
Composition

Resorcyl Aldehyde (from Resorcinol)
Extremely unstable converted
by Dehydrating bodies or
prolonged Exposure to air
in Red Amorphous bodies

Drying
~~Dried~~ Blanks before trimming
till fill. K or non Acetone
gasoline or other usual
Polish with rubber or
rouge (or
rouge) or
something that leaves a
residue that dont
result,
Pure and

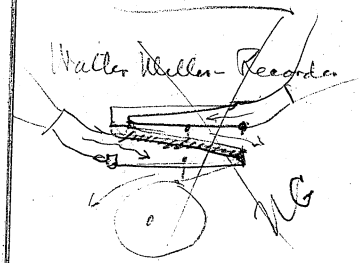
Experts at Oberlin
Try Dry then two 1/2 Liters
Each 50 ft Long



~~Lime Double Salt~~
~~Potassium Zinc Sulphide~~
~~ditto Na Zn "~~
~~Dolwater, Edwards~~

Asphalt Natural & Petroleum
~~Contains~~ Coal Tar & Pitch
Contains Saponifiable
Resins — Make some
Triacids might get Gallic
& Other per Resins Thus
Rosin —

Walter Miller - Recorder



~~Nitric~~

Dichloromethylsulphites
by Dichloromethylsulphurous
acid, not oxidized by Nitric or
aqua regia but decolorized
Zinc with excess of H_2
more than due to H_2SO_4 added at
times — Works under Sulphur
acids
Tri Chloro acid dills

There are an Enormous
Number of Organic
Compounds with Sulphurous
acid. Making acids
which act variously
on salts might be one
Valuable for Leblanc

Dally - Print the plaster blank made in Blank mould

Replace Rosin by Wood Tar patch see if it Oxidizes

Distill gilsonite down as long as oil or m but solvent of use molten of Rosin

Try Resinate ~~Acid~~ + also Res Mg in Oil all ~~[illegible]~~ gelo

Resinate Pb too high MP

Take a Nickel Mould + stone it down - One of new process preferred + see if .001 holes in it - probably none can be seen, as the holes are filled spongy -

Rosolic Acid -
Action on phenol of
Metallic oxides, such as
Peroxide Manganese &
NaOH. by heat
is difficult to force
product from Mn but
I only need Oxide!

Bakes together at 60°C
& Melts at 212 (10) in
boiling water
amorphous almost
insol water

Another one says
Mercuric oxide is better
than MnO_2 for making
Rosolic. The reaction
takes place at 150° & all
over in 10 min, Prepare
the Rosolic from the
Hydrated Hg
Contains pure Na Rosolate

acid likewise the Rosolic

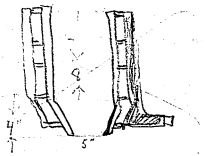
also can be made by
heating phenol with
mercuric Chloride with
Evolution of HCl

Possibly Rosolic acid
$C_6H_6O_2$ may be made with
6/4 phenol -

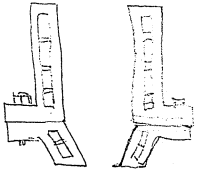
~~Chlorochromic acid
acts on Benzol
to make Resins~~

Chromyl Chloride
or Chlorochromic Anhydride
Makes Resins with Benzol

7" dia



Try Cutting with wire, also Gigli's saw



Alcohol containing Potash
Electrolyzed gives H at
Cathode & Alcoholate
Resin at Anode
probably Methyl gives
Condensate

Acetamide heated with
Salicylal. yields yellow
substance insol in alcohol
after washing with Alcohol
if now washed with
Strong HCl. gives a reddish
Brown Spongy substance

Acridine is from the higher
members of Coal tar
distillation MP 107 - Vap D
6.10 inhaled either in
dust or vapor causes
sneezing & larger quantity
Coughing

~~Retorted~~ H_2SO_4 + $K_2Cr_2O_7$ gives a brown red sublimate

When semi solid portions of Coal tar Naptha which boils at 300° to 360° is treated with dilute H_2SO_4 + acid sol precipitated with $K_2Cr_2O_7$ a dirty brown precip obtained which by repeated sublimation with boiling water yields yellow crystals of basic chromate treated with ammonia yields free base

Thomas — 2nd Sep 24
under microscope

Chromic Acid is best agent to act on sublimate to yield resins —

Crocus of Antimony formed when antimonous sulphide treated with alkali ochre brown powder if dried gently heat melts to glassy mass without loss should be able to sublimate under pressure as it intumesces when scalding

Nitrobenzol heated with NaOH hypobromite gives azo Nitro-benzene, when stopped at a certain stage the product dissolves in cold strong H2SO4 then H_2O precipitates a Resin

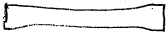
Benzidine digested with Carbon Bisulphide gives a Compound quite insol in all Common Solvents.

1st Sep 156

Ceroso-Ceric Oxide is more powerful oxidizer than most oxides having formula of M_3O_4. Strong H_2SO_4 liberates O_3 one can be held instead of K Permanganate

In Mould holder put springs that Reduce the weight of top mould or record to mere nothing

Make a blank forming Mould Slightly Concave.



also

× squares [illegible]

Christiansen —
Try Expert blowing Anchor Vapor in Chamber with Coffee + HCl from Crude Salt or Salt Cake or Spent acid —

W V a Water power - Nfro

K Chlorate

Soda C.P. K.C.P. Carbon Tetrachloride

Articles plated, shapes, sheets

Nickel plate sheets

Aluminum / Magnesium Lithia

Electrolytic Metals.

Chlorinated Hydrocarbon

Monochlorobenzol. NDS by product

L Oth find the heavy oils

Sol in alcohol -

vs glycerine leaf, Camphor, -

Carbolic acid - in alcohol, quinolin

Etc. also Chlorides sol in alcohol

Organic acids, Caustic soda

Ammonia in alcohol -

Glacial phos acid. Chl Tin

Chl Calcium H_2O, 50 lbs al -

Bromide Ammonium Sol al

Chl " "

Sol alcohol to prevent decomp Ethy

Ammon Cy

Hypophosphite of Ammonia V Sol

Nitrate Ammonium

Sulphocyanate Ammonium

Sulphydrate "

Bromide Barium H_2O V. Sol

Cyanide "

Hydroxide "

Hypophosphate Barium

Perchlorate " V Sol

Sulphocyanide "

Cadmium Bromide

" Chloride Sol in Methyl

Calcium Bromide very S

" Chloride BEST

" Chlorate

" Chromate

" Hypophosphate

" Sulphydrate

" Sulphocyanate V Sol

Copper Ammonia Chloride

" Chlorate

" Chloride Methyl

To prevent sticking

Copper Salicylate V Sol
Iron Ferrocyanide
" " Chloride
" Nitrate

Hydrazine
Hydroxylamine
Acetate lead
Nitrate "
Perchlorate lead

Lithium Hydroxide Slightly
" Chloride
Magnesium Acetate V Sol
Dg " Bromide H_2O
Chlorate
Chloride Anhy + H_2O
Sulphate " + H_2O

Manganese Chloride Anhy + H_2O
Nitrate V Sol
Sulphate V Sol

dilute

Mercuric Acetate
HgCy
Mercuric Chl

Phosphotungstic acid
Potassium Chloride
" Hydrosulphide V S
Hydroxide V S
Iodide
Acid Orthophosphate
Monosulphide + all K Salts
KCy S Sol
Stannous Chl Anhy
ZnCl

Carbonated V S

C51 J

Rosin stripping

Advantageous, slight Acetate Magnesia
" considerable Mercuric Chloride

22 only fair KOH,
Conc Chloride Calcium
is very good,

Alcoholic, Conc Very Very bad,

Dally-Dumoulin doing it
Make good Rollen stone
Chunk Clay - Silicate Magnesia,
Kaselghur Silica, + any other
we may have,

Test the Quicklimed in Alcohol
of the gob that dont soften
than act on usual way that
to liberate the Resin from
supposed Ca Resinate -

Make some resinate of Soda then
Oxidize Solution by H_2O_2
Ferridcy K - PbO_2, Permanganate K
Hypo, Na Perox - Chlorine Hot air
Then neutral to recover the
Resin & ascertain its properties

Bromides -
Calcium Br Very Sol Alcohol
Zinc Br " "

Chlorides Zinc Cl - 100 al -
Bismuth Triche 50 l anhy
Calcium Chl 50 l anhy
Cupric Chl Sol 53 "
Ferric Chl V Sol. "
Ferrous Chl 100 al "
Lithia Chl 2.475
Magnesium Cl 50
Manganese Cl Sol
Mercuric Cl 43
Nickel Cl Sol
Potassium Cl Sol
Stannous Chl Sol

Zn Chl very sol in Ether.

Acetone probably better than alcohol,

For Smoke formaldehyde vapor & ammonia. ditto formaldehyde with gas –

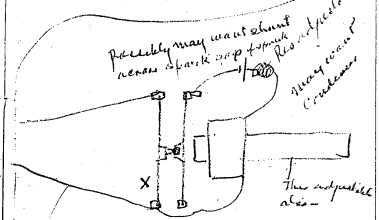
Try subliming Oxalic acid for smoke – try it again.

Coating blank moulds with Hemp palm alcohol dont seem to be a success

Try mixing Gum with Rubber to increase the Conductivity – ditto Sandarac

Try thin discs of Tin Copper Zinc lead, Brass Aluminum Nickel – Amalgamated Tin Copper, –

Also Rubber (hard) & soft – Celluloid –



This adjustable, to get a high note self vibrator then low waves not audible affect dia X – vary the volume or note & so that made audible,

Should go in war book

Take fresh gob & heat in a liquid to stop oxidation & press –

To prevent oxidation add a little Linseed oil –
ditto Paramedaphenol –
ditto Paraphenylenediamine
ditto 6/4 –

Treat the Resinate Mem with acid to remove the Oxidized Resin

Make Solution Resinate Soda – Oxidize the Solution till Resin fully oxidized then precip by HCl & wash & dry & then bring down MP by addition like Stearic, Stearoil etc –

Around 2% Sulphur in Rosin makes it leave dish better, Excess not so good

Rosin & 6/4 with para makes leave dish OK changes Color darkish nearly black Considerable gas comes off so foams greatly but not so brittle can scrape chips also can't scratch with pen Something in this –

HCl ng – Tetramap NG
Carnauba NG

React on Resinate Naoh as much as possible & precip by HCl

get some hard wood Tar pitch
Beechwood Tar pitch &
Reg Southern Wood Tar Pitch

Ask Dupont Co. piece of Cumerone Resin.

Ask Gray of NY where I can get Aldehyde Resin from Cashone Refrs

Try Gilsonite with Sulphur

Heat Naphthalene with Sulfur

Heat condensate Carbon to 600 Fahr then let it absorb air under Hg Column

Take Gob out mixing & pass through Rolls 120 deg Fahr also hotter.

Oxidize NaOH Resinate separate then bring down its softening point by adding a solid softening agent

Use Mg or Mn Resinate wholly with something that reduces its softening point down to Room & which does not oxidize — try Cleanic, Naphthaline, Gilsonite, Straw oil.

Make blank Silicate Mg Varnish dont Condense just dry — see blank if its molded close in Printing — Condense in place to stop wrinkles Cracks Etc

Old Export book says need mix of Gilsonite + Room with Red lead Condent scratch with Nail, then say to Gilsonite alone Rosin not necessary + later say Gilsonite 33% dilution

off works OK + wont scratched by finger nail

Aniline Hydrochloride make Rosin less brittle, stands a bat.

Tetrachloronap + Resinate of Aluminum in proper proportions acts like shellac chips by itself doesnt scratch with finger nail

Lead Resinate used in our reg Varn to beat off the scratch Resinate Tried.

Manilla Copal after heating to get tough they fed to Tetrinaphthol bends to the hand

It is said than an Ammonical Solution of Lead Acetate well precipitate Molasses from Water + make it insol see if Can be used for dress

Hard Coal Tar pitch 60 — 57
Chinese Clay. 3 flock hard to Cut fairly hard to scratch
Promising —

Dally mix with Reg Varnish as much china clay as it will stand & be capable of being put on to dummy Construction in condensing
dello Silica, Magnesia, chalk

Then try with more alcohol + add more china clay & so on till we get 50% Chinaclay.

Dulley — Make 300 China clay
120 Rosin — 30 flock —
+ Squirt in Macaroni machine pass thru 30 Mesh + moved blank in pieces —

Try the Soda Alum again in mixer pressing a little steam thru to prevent loss of water —

Dalley where are the 2 records you made that was made from 30 mesh powder from Mercantile Went to see of Varnish cracked

Try Gilsonite with Mg Silicate flock + flour sulphur

Dissolve Gilsonite in a solution not attacked by Chl Sulphur + sulphurize in various proportions + decide off —

Also try Rosin Manilla Copal Try that Naphthalene + Chl5 you made,

Varnish Exports Mg Silicate —

Varnish 2 Each — 4 Print
All 4 Para

Req Var. 1 Para Req 6/4 —
" 10% 6/4 4 Para
" 15 6/4 4 Para

Req Varnish 4 para but on 6 6/4

Ask Storage Dalley Records to Charge 2 Cells Dalley set aside for 2 weeks

Assemble new charges vrons with 1 Cell & new chg Nickel with other to see which takes charge

No 1 of 72

Write on paper with 15% solution of NaOH then expose to Bisulfide Carbon & wet for blind people

Also use regular ink & put powder in bottle solution & add a gum that causes written with a dust or with a gritty powder Cryptolian for Blind —

Lefande by Oxysulfide of Cu's CuO | 5 CuS

Ignite the Nitrate to get fine CuO

Use non assay Cupric hydrate precipitated from pulle washed Carbonate pp 2x sq. added of NaOH

When dry: Cupric hydroxide stand temp of 212 before starting to turn black turns black when boiled in alkali —

After dry put some in NaOH 21% & keep at 110% fahr see if it turns

It's CuO 2H2O

Polysulfides of Copper pentasulfide of Potash precip from Copper salts (very colored) precips turning black & after drying not altered by exposure to air or by washing or boiling water

di tri & tetrasulfides of Potash precip Corresponding Bisulphides —
CuS_5 is from Potash Kolb.

Thus should work
of Sulphate of Zinc & Na Sulphide
Solution & the stable

Probably mixed Cupric hydrate with Manganic Chromic & Sulphates gives a Compound that will be stable

Faraday's Sulphuret of Palladium made thus. Equal weights of fused Caustick & Sulphur are mixed & heated gradually in a Florence flask till the whole has fused & united & the Sulphur in excess begins to sublime
Is then cooled & dissolved in water so as to form a strong sol, on standing it becomes clear

Cupric oxide by precipitation is reduced to metal by Ether whereas the oxide prepared in any way is not reduced Easy to Cuprous —

Precipitate of phosphide
with acid.
Electrolyze phosphide
of Zinc + Cuphos

Use in Coal tar pitch
Salicylic acid to lower MP
+ make blanks out of wire & bells
(also found high BP liquid)
for Arsenic -
Lyndon

Dissolve cell, Change
Remove Nickel spark
in platinum dissolved
(& also then acid back
Drak Mercurous
Chloride also

$CuOH_2$ formed in ice water, used in
Lebanon. Change it by current to
see if higher oxide formed. It
changed from black

Precipitate some Fe, Mn, Co, Ni,
say 20% with $(CuOH)_2$ take
of acid Calculations -

Mix Brake lining Carb
+ Chromic acid with
Hydrofluoric hydrate
+ also anhydrous lime
in Mixer make blank
Vacuum thing period of
calcining the wood charcoal
by heat [illegible]
process

Rotene C18 H18-
Rosin oil mixed 1/3 wt
of [illegible] heat [illegible]
HS Cannot Urea
decolor & get Rotene
or Mixed with
[illegible] Coumts.

Dissolve rubber in Rosin
till right consistency
should be like Gilla
(Perchar or Pontiac -
belong which is Rubber
& Resin — Try Naphtha
to mixed —
Might swell with
Salt Nap & then add
A to melted Rosin

Write Wal Lampin
in re Phenol & Rosin

Jnl of Chem Industry
1888 Dec 31
p 807 -
W W Staveley

see his letter
Its not same thing but it
may interest him —
Said use Trico Sulphate
Soda but finally
adopted Salt
to neutralize the Benz Sulph

Try Phenates of
Metals for dise

[51]

Condensing Phenol with
Acetic anhy + Chl Zn
10 grams phenol 20 grams
acetic anhydride 20 grams
Chl Zn heated 30 min
in Reversed Condenser
Amorphous Sub should
be well washed with
water + then with 5% sol
HCl. in water bath
then precipitated with
ammonia - grows
an amorphous substance
insol H_2O or Phenol Ether
EtOH alc or ether

Mn Oxides 30 combine with
Equal atoms that may do for
Leucoids —

Suppose we use an oxide
which when reduced
is sol in KOH or NaOH
if we now dissolve a Potash
Salt of an acid which
acid precips the MnO
in KOH we would prevent
it dissolving prevent
it didn't stop the formation
of 2 manate

Try Red CuO from plate
or scales + use NaOH
in which 10% of
strong Na Polysulfide
is dissolved
also - only polysulfide

Make Cupric hydrox from following Copper salts, & test after digesting in 21% NaOH for stability as to heat.

Phosphate
Carbonate
Arsenate
Borate
Aluminate
Resinate
Oleate

Also take some & heat in air to see temp turns black, also see if Hydrox dried at def temp short of turning black will be more stable in 21% NaOH.

Also try 15% NaOH
" 15 + 21% NaOH

Also make several def kinds of basic Cupric salts & precip these cold,

Stable Hydroxides even in NaOH heat

See J. W. Van Bemmelen
Zeit. anorg Chem 5, p 466
483.

Cupriedane hydrate prepared by slow action of dilute alkali on various Copper salts in cold + not affected by alkalies or heat, may be boiled in water without change

over

~~1 liter per gram~~

Hydrogel of Cu hydrox

The precipitate hydrox is purified by repeated washing with large quantities of cold water 1 liter per gram the mass being collected on a cloth filter after each washing otherwise not lasting more than 1 hour to avoid

Change of color, pure hydrogel is thick bright blue jelly after pressing between cardboard 24 hours still contains 20 molecules water

Absorption, retains its color under water for several days but in ~~that~~ water resembles

Crystallized ~~hydrox~~ rarely undergoes gradual modification until it turns green when exposed at room temp for several days when air is dried artificially it loses water until its vapor pressure equals that of the atmosphere the formula is then $CuOH_2O$.

The bad neighbors of jelly is only partially eliminated time eliminates the water gradually this is helped by heat

the hydrogel is stable towards alkali + alkali + acid

The crystalline salt prepared by slow action of very dilute alkali on various copper salts in the cold is not affected by alkali or heat

says in some way the alkali acts in same unknown way to produce the stability

CuO disassociates at 960° Cu₂O increasing as temp goes up.

When blue hydrox turns color to brown it $Cu(OH)_2\ 3\ CuO$ or $Cu_4O_3(OH)_2$

also Cu salts with Barium hydrox form basic salts except acetate or perchlorate which have no action

Trans Vol 95 1909 p 370

H Medford Dawson — Crystalized Cu hydrox

adds aqueous ammonia from a burette with a cooling & coil stirrer solution containing 50 grams of cupric sulfate dis in 300 to 400 cc water until supernatant liquid begins to assume the blue color of ammoniacal copper solution

The precipitated basic salt is well washed & triturated in a porcelain dish with with 300 to 400 cc of Ba's solution of sodium hydrox free from carbonate & blue hydrox dried in vacuo over H_2SO_4

after every trace of sulphate
had been washed out
its Crystalline hydrox
to bright blue color
& to not at all readily
converted into the oxide
at 100°

Crystalline Cupric hydrox
been obtained by various
plans see
Becquerel Compt R 1852
34 p 573 –
Böttger Jahresber 1858
198
Peligot Compt R
1861 53 209 –
Van Bemmelen p 474

If Cupric hydrox & metallic Cu
be shaken in a test tube in
NaOH. the Cu hydrox will in
a few days be completely
reduced to Cuprous oxide

– this shows a large amount
of graphite must be used
so there will be no copper
near the hydrox.

As Cu reduces CuO to Cu_2O
it is probable that traces of
a sulphur compound will
act on metal Cu & sulphuryl
& prevent it reducing the
CuO, this may explain
NaOH Carbolic results

see if it affects the
hydrox of Cu if not
try it –
~~Cu(OH)~~ ~~[illegible]~~

Cu OH precipitated by reduced copper (Lowry)

Possibly some one dye or small coat reduced copper. also a fine non sol Colloid might be precipitated with the $Cu(OH)_2$ to keep the reduced copper from reducing the $Cu(OH)_2$ but ~~Allman says Cupric hydroxide is not reduced by metallic Cu~~

Allman says
Trans 97 1910 603
that crystallized Cupric hydroxide when treated with Conc Alkali at room temp is converted into Cupric Ox

Haberman Zeit anorg Chem 1906 50 315-19

says a fairly stable form of Cupric hydroxide got by digesting Basic Copper sulphate $7CuO\ 2SO_3\ 5H_2O$ with 10% KOH washing in Cold water + alcohol + drying at 100°C

Basic salt is obtained by adding 50 cc of 2N NaOH on 5 grams $CuSO_4$ in 200 cc water in Cold, its washed + dried at 105°C

If we succeed in precipitating (regenerating) $Cu(OH)_2$ try same thing with Nickel also Bismuth,

layer of turpentine on Lakunde to absorb O or Ponderomotely reoxidize the Cu(OH)$_2$, Amyl Alc of peroxide absorbs but only when exposed to light

Perhaps Rosin or resins dissolved in KOH or NaOH will increase the solubility of $Zn(OH)_2$ like Silica forming double salt

Highly Oxygenated Salts
Eko 7 Jaubert (DRP 229572)

Sodium peroxide hydrochloride
pass dry HCl into Sodium peroxide suspended in Carbon Tetra chloride
Colorless powder, sol water
10% available Oxy

Sodium perforate
Sodium formate obtained same manner

Sod peroxide Ethyl acetate
prepared from Na peroxide & Ethyl acetate in Chloroform

Naperox Benzoate by using Benzoyl chloride

Addition of Ammonia to a Conc sol Zinc sulfate till ppt disappears + addition of large excess of H_2O_2 30% H_2O_2 Zinc peroxides obtained
$10\,ZnO_2 \mid 4\,ZnO, 5\,H_2O$ +
$8\,ZnO_2\ 4\,ZnO \mid H_2O$

Ferrous Oxide can be extracted from many things, 1st Reduced to Ferrous + dissolved out by Naphthenic Acid in light petroleum it extracts quantatively the ferrous ox from aqueous sol of ferrous salts.

R W Charitschkoff
Chem Zeit 1911

Dolly - Try Candellerin Wax
Oleic acid, Japan wax
paraffin, with Glycerite
Lanolin -
Naphthalene Camphor oil -
Rosin oil - Cumaric acid
Trichloro phenol -
Tetrachloronaphthalene
Salicylic acid
Aniline hydrochloride
Resinate lead,

α-Nitronaphthalene reacts with Sulphur to form an amorphous product unobtainable Insol in alkali + only sol nitrobenzene, showing sulphur Reaction takes place at 240° Promising Transactions Vol 67 1895 p 640
MP 155, Carbo crystl has 19% S

Size of $Cu(OH)_2$ will
Crystallize from acetone

Cupric Carbonate did give results
does something to make it
Easily filtered from 20% NaOH

K silicofluoride removes
nearly all —

Bone black removes all
discoloring its Carbon &
not discharged —

80% $Cu(OH)_2$ & 20% graphite
heat, gives a little over
140 milamp hours per gram
think can ~~get~~ get 160 ~~20%~~ 80%
by charge rate of 50 ma —
above work at 100 ma

per hour —
This appears to be nearly
as good as $Ni(OH)_2$ in battery

Bismuth in storage battery
perhaps 50 mesh bone black
packed solid in cell caused
precent Bi from going in view
of its a floating Carbon
like $Cu(OH)_2$ as respect

We get 660 ~~milamp hours~~
for 980 ~~grams of black ox~~
~~(black)~~

Manganic hydrox is
got by precipitating a
Manganic Salt by
Cuprous alkali.
unstable to heat like
$Cu(OH)$ — try its salt or oxide

sesquioxide Mn can be boiled in NaOH & not dissolves
Manganous OH absorbs O from air to form sesqui OH

Manganite of KOH not sol in NaOH. NaOH NG

Manganic will probably combine with $(Cu(OH)_2)$ Iron & Copper, Mn Wonder

Make some hydrated silicate of Copper, think it will not be sol in NaOH, except perhaps as a colloid –

Also the Antimonate or its of $Cu(OH)_2$ –

Try Magnetic $(OH)_2$ & ferric OH. ~~with~~ with graphite.
Magnetic OXIDE hydrate worth while

[70]

perhaps NiOH by precipitating in large amount & slowly in ice water & filtering to avoid contact air dried
We might get a higher hydration –

Make some of the Crystalline hydrox of Ni

We might find a solution of some salt when strong that would dissolve $Ni(OH)_2$ slightly as an easily decomposed double salt when on evaporation would decompose & crystalize out –

Same with Copper

See if Copper Amon Sol: are Colloid – Bone black

Sesquioxide Cu or Cupric acid not known in separate state but Ca Salt often prepared Cuprate of Calcium beautiful Rose color by mixing Chloride Lime with a Sol of Cupric Nitrate, decomposes but slowly Krüger Pogg Ann lxxii 445 —
Crum Ann Ch Pharm
lv 213 —

Trioxide antimony forms antimonites
its very feeble acid
dissolves easily in KOH,
but salt easily decomposed
even by Zinc
[illegible]
it reduces Gold

Whitish acid antimonate of K
not dis by KOH, but
$(K_2O \cdot 2Sb_2O_5)\ 6H_2O$

I wonder if persulphate of Barium Sr or Ca is used in NaOH or KOH, if not could be used with graphite —
(Delkuke)

KOH dont precipt Barium Salts except when very concentrated, therefore a Barium Salt having a Loose OH, will work.

Bichromate — persulphate
How not [illegible]

As all oxides of hydrogen are slightly sol in H_2O long heating tends to cause crystallization of the [illegible]

Make some hydrofluoroxalic of Copper

Inq peroxide Barnmrgrafile

Present capacity of Leland

581 Milamp hours per grame of plate at 1 ampere rate. at 70 Fahr

1.38 gms metallic Cop for ampere hour at low rate.

our so far 1.900 metal per amp hour at high rate a nearly 1/2 at 1 Volt

Hello! Cell No 3 stand.

160 Fahr for 1/2 hour

at the time this is recorded in 21% NaOH. 45 mins used 46 ohmw

(S)

500 amp Cell single Copper Plate. Weight 870 grammes

Theoritic capacity 680 amp H

Actually obtain to 1/2 Volt 581 AH at 1 amp discharge rate and 438 amp H at 3 amp rate

85% Efficiency

Theoretical Zinc should give 810

obtain at 1 amp rate 593

73% Efficiency

NaOH Theory 670 A.H.

obtain 530 Efficiency 79%

all above at 70° Fahr

I notice that the blue CuOH dissolved in NaOH, dont turn black + can be filtered out this is stable, it may be a Cuprate, sea of can be got stronger by organic matter or otherwise,

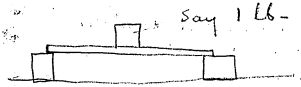
Heat blue NaOH 21% up & see if it will go black —
also NH_4m 21% NaOH if it will dissolve more, perhaps a mixture will dissolve considerable on boiling & coagulating out on Chilling + perhaps salting out by NaCl —

Manganate of Copper dont seem sol in NaOH.

L Ott #3 good
Silicofluoride & Chromofluoride better than #3 Ott —
but uncertain
#3 Ott best to date

Samen want to make some black hydrate of Copper — Make 2 pckts without graphite & 2 with 20% graphite 2nd 212

Also dehydrate enough for 4 pckts. 2 to be without graphite & 2 with graphite



for testing flow of records at 110° Fahr in oven with auto regulator —

Find out from McCheany why overdeposition is responsible for & inferior to Compositions —

Thinking shows found our CuO very fine & get porosity & better results

so fine that the bulk of plate per produced is as great as possible,

Daily think must repress blanks in raymond – then lacquer → perhaps make blank, varnish very light, dry + press in powder blank mould high temp with rapid condensing fan + then use it in frequent way to varnish –

See if Lehmann have introduced the Rubber for preserving plates

See if Copper hydroxide will lock plates together in baking –

In getting a good cement for Cu plates use 2" moulded w.s. mould on disc Ergonite moulded + baked with deformant arrangement to lock plates, Resin, Chl ammonia, NaOH,

different proportions,

Make alloys of Zinc + test for efficiency also if can get $Zn(OH)_2$ to flake off unless dissolving.

Get some Zn saturated NaOH, then some freshly precipitated $Zn(OH)_2$, at most 20% of XYZ of the NaOH, (10) 4 pts to 2 say 20 of NaOH record it work dissolves more, Zinc If this want good way when Zincate in saturated NaOH, + add the stuff raise how long it will run? try everything in Lab –

Colloids - Dry cell Islands

Semi suspension - Clay - Ultramarine
Wheat starch, gum mastic in alcohol
poured into a copper solution

Non reversible Colloids
Stannic acid
Reversible Colloids
Molybdic acid (not coagulated by electrolytes)
Glycogen, Dextrin some degree of stiffness
Tungstic acid Congo red
Arsenic Sulfide, Silica from Nasitic
by Dialysis, H_2SO_4 soon coagulate

Ferrocyanide Copper Uranium
Tungstic acid (most remarkable)
not affected by anything
Colloidal Cu Sulfide, many
metallic sulfides
Gamboge, Carmine (dyes)
Fluorescein, Uranine + many dyes

Dally Dry some BS
as exciter, Wood Tar,
Pitch — Petroleum residuum
Some of the Tar from Carbolic
acid Stills, Balsam Canada
Residuum from distilling Solvent
Naphtha Tetrahydronaphthalene
Coal Tar, Japan wax

L Ott, Take Petroleum
Naphtha Benzine +
Low flash Kerosene
Equal proportions
make many fractions
& find best Solvent
for Rosin —

When get good crystaline
$Cu(OH)_2$ put in 21% NaOH.
work on dill - pour off
the 21% & put fresh in -
do this several times to
see if it will stop going
into solution.

If it keeps going try all
the practical cheap
Colloids in the NaOH to see
if they will precipitate it

Copper dust by Zinc reduction
& stirring - wash & dry
Then put in Reg Hack
mould & mould 1/4" Hack
with high pressure -
Then print with heavy
pressure. Then use
to make Cog moulds.

Also try with minimum of some
binder, try that - ~~gum~~

Lots No 9 which is
Why precipitation & the
only one showing cheap
malleable cheap crystal
treatment & by magnitude
of 1/32" mesh went in
NaOH 21% 5 Hours at
118° Fah before showed
any signs of blackening
& then only on contact
at bottom of watch
glass we removed the
NaOH, all others only
2 or 3 hours & Carry
all samples Colored
the NaOH about same
tint, quite blue -

Nov 1 1918

Save Alcohol in Disc blanks

took 90 cc Kerosene
10 cc alcohol
33 grams Rosin –

dissolves on shaking perfectly at ordinary temp.

Can use less solvent if necessary & think –

The above Rosin dissolves at ordinary temperature.

Disc Blanks

33 grms Rosin
90 cc Kerosene
10 cc Alcohol

is right proportion for 6 blanks

Kerosene distilled as follows

cc	BP Fahr 75" Vac	
0	287	210
2	318	220
5	329	240
10	343	254
20	363	266
30	370	280
40	383	290
50	397	306
60	414	324
70	428	340
80	446	378
90	480	388
95	500	400

Very small quant 1

next largest 2

not quite 3
88° dry by BP Tables

Just a little smaller 4

No 4 may not be necessary

If we got 287 to 383,
the vacuum dryer would
probably do the kerosene.

C65

Make mixture of alcohol & water & get best solubility for Resin

50 water
50 alc

33 Resin of ok

determine the alc-water the water

Look into the method of preparing colloids & emulsions & get rid of Compressed air

95 grams by vol Kerosene
5 " Alcohol
33 " Resin

dissolves ok ordinary temp by shaking

98 Kero + 2 alcohol

Present Hoffman 1000 blanks.

Resin 163 lbs
Alcohol 500 lbs 73.53 Gals

Recovery 75% undistilled, Contains H_2O –

Latest determination of BP of Kerosene

cc	28" Vac	24" Vac	16 Vac	B
0	186	210	287	101
2	194	220	318	124
5	204	240	329	115
10	212	254	343	131
20	226	266	363	137
30	242	280	370	128
40	254	290	383	129
50	264	306	397	133
60	278	324	414	136
70	292	340	428	136
80	310	378	446	136
90	340	388	460	140
95	368	400	500	132

Limit of Thermometer

3 to 3½% alcohol OK

Put thing shake + bottle warm OK
Percentage alcohol

I notice that the first lot made that in 24 hours some settles out — and cloudy but it was not shaken

Try flotation oils instead of Alcohol for Kerosene Rosin dissolver

Pine oil	58 c
Pine tar oil	35 c
Hardwood	23 c
Wood Creosote oil	31

G Abmkvist in Z anorg Chem 1918 103 – 240 – 242 gives following solubilities in distilled water at 20°C or 68° Fahr

Nickel (OH) 2	12.7	mlg per liter
Cobalt (OH) 2	3.18	"
BiO OH.	1.44	"
Fe (OH)3	0.151	"
MnO OH2	0.43	"

See also Jnl Chem Soc 1918 ii 320

Legal Dept get copy US Patent Hydrogenated Oil Composition for marking Second reference US Pat 1.276 507 - 27

Paste for Stereotype Matts

100 China clay	
75 Starch	
150 Na_2CO_3	
Corn oil	10
Water	860

	Soluble 10%	Need Solution 20	30	40	50	60	70
Mila 1 to 1 V. —	25	575	475	375	250	175	125
Mila 1 volume to 1 gravity	95	244.7	242.3	223.2	192.2	168	160
1 Vol + 1 to 1/2 V	1363	1194	1075	575	600	462	163
Mil and 1 to 1 Vol	517	510	551	520	462	445	209

Dry Trichloride Chromium peach blossom — not sol in KCl. should work with KCl as Electrolyte, or KCl.

Chromic oxide in neutral or acid sol is precipitated by Ammonia — Keep dur from precip — If this ok then use Chl. Ammonium Electrolyte with Zinc

Chromous-Chromic Oxide ppted by KCl, without exclusion of air — $CrO-Cr_2O_3$ —

Basic Chromate (Lead) not acted on by Alkalis see Watts, Acetate of Lead & Chromate Lead Reaction.

& Ott make the Chromium hydrate p 949 Watts
Also Chromium & Ammonium Combination 950 & 951 page
Basic oxide Chromium p 951, Chromic hydrate

Chromate Zinc is slightly Sol in Water

Ceroso-Ceric hydrate.
Pour Chlorine into aqueous Caustic Soda in which the hydrox is suspended
Bright yellow.

Chromate of Copper & Potassium — Double Salt
$K_2O, 3\,CuO - 3\,CrO_3/3\,aq$
Obtained by treating recently precipitated cupric hydrox with solution of Acid Chromate of K. Only by mixing cupric Sulphate with Acid Chromate K & gradually adding K[illegible] Bichron powder equal in Weight. Sat & gives Watts, Mg. OK up to certain amt of NaOH. Excess NaOH dissolves it

Carbonate of Zinc & Sodium
Double Salt)

Carb Zinc & Ammonia
$NH_3\,Zn\,CO_3$ Deposited in Crystals from a Solution of precipitated Carb of Zn in a strong Sol of Carb NH_3

Carb Zinc & Potassium deposited in Crystals from a Solution of Chloride Zinc mixed with Sesquicarbonate of Potassium
Sodium same way

Try with 30% qu. of the Trinitro Di Nitro & Mononitro Solids - probably in Na Nitrite Zn should decompose them & form Nitrite Zinc Sol

Amdoplanol
Dillman pre war prices

Base CP $ 5. Kilo 1000 grms 3.17 lb
Hydrochloride CP 4.25. " $2.70

Base Consd - 1.62 "
Hydrochloride Consd 1.37. 80 cents

Amberols -
Loss to be added to the cost of records 7.37 cents
Off 699000 made in Sept.
352000 were OK.
Total Loss 26000 for month of Sept —

Amberols week ending 10/26/18 -
Inspected 90000
Rejected 14709
83.7 OK - 41.5% Light 9.2 Hair 2.1 7.0
Cutting chips 8.1 32 defects Collodion
Sept only 44% OK Okay

Haeckel to 70° 10% Ammonia & Sodium (Dillman)

Amberols
Force hot plates pours made of Cylinders & hold till set & central & they do no reamings - Use false sheet wax Rej Cell or Rubber to easy withdraw

More pressure to insure imprint

Perhaps can use hot Plates?
+ press & mould 2 min Time
Perhaps use Rubber

C951

Kneading —
Edges at bend too sharp —
Preliminary shaping in heavy steel
Mould to size & smooth out
wedges + dings etc. use hydraulic + heat.

Less bend + not as sharp as bend.

End rings instead of Gemming
all the way —

Do away with 450 HP air,

Stop lint + hair —

Make Principal Black Ox — run to
500 deg — Mould without side
9 pieces hydraulic elec pressure
+ put in solution to test
also unbaked + pressed then
heat to 500 @ 60 min. also
binder of Fernic Etc. etc also
Mi Etc. as binder, — Dip with 15% graphite

~~Try Reg Cup plate now made~~
~~Contact grinder to attend.~~
~~try 2 days 1st Then execution~~
~~all steps —~~

Make many manganese
precip under Various
Conditions Make discharge
Rate 100 & also 50 when
below 85

Print - Use metallic Elc and mix & pour in white rubber a hardening Compound -

Mould a Rosin clay flock or a Mouth Copal flock clay blank - Coat with a zapon dope containing Camphor dry & print

Make blank of Reg powder Then Varnish with Cordite & bake Then print back up mounted by stick Dic -
also method of Cordite use Celluloid dope with Camphor on -

Headboard Wood or Ivory Pocket Clean See To see Lieutenant mr. Bielstein -

See about filling Hoof for use gone, if possible stop it -

Dissolve Rosin in Kerosene Make blank 4 wood 3 Chalk + work regular Dry in Vac - Etc flock take up with Clarke for introduction.

Crack up some of our Rosin flock clay Mix & Mould the powder

As our blank is not porous as Var is loaded to prevent Var running in pores of Reg blank Make some Varnish not loaded & try This allows Var to contract more a fit blank

Bake Reg CuO powder from Silver Lake with increasing amounts of Soda up to limit. Then soak out excess to increase porosity + see if still strong

see if Edges bevelled w. pressed on or ground, + why bevelled Edges —

Mould the plates with some Wood flour fine + wet with KOH Burn the flock well Carbonize & burn out a large plate pouring

dittto Mix with Naphthalene Resinate Soda etc & burn out + reoxidize — Chloride amm

If have no small due have one made go down to Lake & see present mf Chods

and look work place for dumpheap Ask Chodinski to see the Various Samples from test mines —

Phosphate of Manganese + Ammonium Dof in 32000 pts water — pbty use Wyll Electrolyte

Peroxide lead & Chloroxide & Chl ammon Electrolyte

Can the Alkalis of have any organic matter turn permanganate K green

K permanganate does not act on Zinc or Copper

S

Probably Cracks Records by not holding pressure up when Cooling. With high pressure under blank can contract & surface not —

Fix Lithia Contract Letter to Daniels & to Hamphill —

See about Embossed cut pieces to hang them — also if Count be made of Hardened Steel —

Dez Ott gets the Kerosene & Dimmoddy makes the blanks & Prints —

Dissolve Wax Drips in Viscose solution,

Grind them 30 mesh or 20 Reg new style disc mix & Repress —

Look over Dallys Prints for Cracks etc & mark them & note those badly Cho — Note the softness in Cho blanks

Coat new Record with a mesh — Blacks & porous, Veres & prints,

Dook a blank on alcohol or hot Kero to remove some of the Rosin on face to make it porous,

Dally Represents some of the blanks that show up great as records (10) Represent them

Polish surface of good blanks (that come through) & varnish + Bake in our oven, Slow, using no filler but increase the Paraffin 4 —

Cylinder Records Discards
(approximate)

Nov 1st to 8th

	Discard
Moulding	8%
Printing	40
Reaming	2
Backing	1
Final Inspection	15 not 45%

Try newspaper sulphite pulp mixed of ground pulp with alcohol + also benzene + make blanks & points —

Also since we can get shellac try that,

Also try clay flock + phenol Resin with hardener in it 12% Alcohol dissolved & flock will be spread out.

(105)

Varnish Zinc Wood,
Paper, glass, Reg Var
& linoleum, + put away for
time tests for shrinking

Permanic acid delaude
Uranic salts should
be cheap now

Starch as a binder
baked then varnished

Cox head of SL
Delaude Lab —

Chrysoidin find out
the greatest amount
~~of~~ paraphenylenediamine
well dissolves in Aniline

Act on our wood pulp by
hot soda & bleaching to
split books - for blacks -

Try China Clay & linseed
oil - mix & oxidize use
harlem, also Chinese
wood oil - polymerize by
heat -

See if Resinate of Zinc is
sol in NaOH —

Dammar - Binders for wash on
blank - Celluloid dope - chalk - clay
Rosin, Manilla, Diluted Reg Var,
Shellac, Phenol Resin -
glue, Rubber, Japan Varnish,
gilsonite in best Inks and, Balata,
Stearate Ammonia in Benzene + acetone amyl

1 = Try a funnel on pipe in Echo box.

2 = Fix brass so can listen at table bellows operate tube. Each for see if moves down near it which furthest — if out phase has Phase tube moves Resonator. if second together —

Make an Echo room

3 5X5 in all dimensions for tube,

4 Try 1 ft diam

5 Widen Echo box 12 hours to 48"

6 = Put a diaphram on end of tube in Echo box 1st at listening end of tuning fork and 4 Catch Echo colors

7 Move fork box perhaps end of tube makes a node

8 Take fork box near to Werner + get record also move it away a Record Resonator

9 Take Crooks out of tube get it where ~~[illegible]~~ straight, also no Sunken Cavities

Cupric Antimonite $CuSb_2O_4$

dilute Sol $CuSO_4$ added to Sol of Potassium Antimonyl Tartrate in 8% KOH, grain crystalline powder

Chrysoidine –
Diazotisation
by Hantzsch Ber 1899
32 1699 1703 – Chem Soc
pt Vol 76 1899 549-50
wants Excess acid + 16 hours
for big yield, for aniline & other

Exhausted helianthin Sol decolorized to .45 Volt
Take 200 cc water
to cloud sol. Warm
add Zinc

Paraphenylenediamine

8 grams dissolve in 100 Aniline at 70 Tube

10 grams in 100 Aniline at 120° Tube

14 gr dissolve in 100. at 70°
when aniline contains
10 grams Alcohol

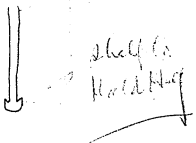
Cover Rosinator with
Cowhair allows
dec effect –

Extra Electrodes

Try these -

Try the all Brass Instrument tubes short & Long pair

Shande 10 lbs test Zinc for Cadmium which scales the Zinc



Straw Oil instead of Paraffine oil for Lelande set up as for with Ray Electrolyte top exposed with 1/8" Strong Zinc on shelf Freeze test also -

Get samples of Common Zinc + test also test for scale forming metals like Cadmium -

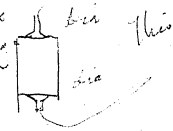
See if Can by pure black Sulfide or Carbonate ore, Roast + use -

Test Amblygonite in flame get a fixed test for Lithium in ore, Newtry Jersey

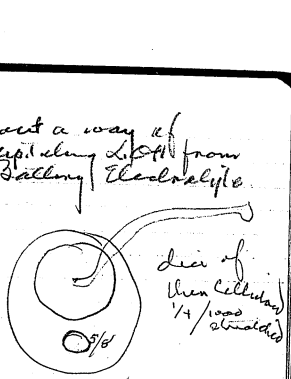
find out if we save old solution for Lithia
also soak out old plates

find out if Regeneration also leaks is an operation if not try get a man

Make a holder for old Sound Tube cards



Find out a way of precipitating $LiOH$ from Old Battery Electrolyte



gradually close holes + turn self cam get it entirely closed then using testing tube try funnel at least at 5/8

Make holder to hold Large listening tube in back glass —

Try small hole listening tubes

Note that reading a 2nd listening tube to top of wood so as lengthens column from 2 1/8 to 3 inches —

Make a brass sliding listening tube for prime tube so it can be turned to prime as well as the loaded column

Make the Manometric flame Receiver — delete the Sensitive flame

Different Precipitations

CuO flakes —

Ground fine, Binders,

NaOH, Silicate Soda, Acetate Lime

Acetate Magnesia, Alum,

Boric acid, $Cu(OH)_2$

$Ni(OH)_2$, Clay, Borax,

$Fe_2O_3.OH$, — Na_2CO_2 - Starch,

see further along

For porosity, Wood fibre sawdust

Perforated paper,

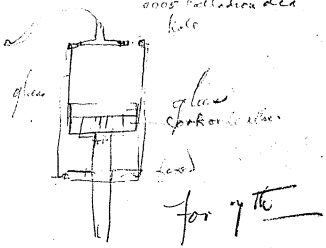
Chloride of Ammonia —

Ground Cork 1/32 mesh

Na Sulphate,

Neo Cell –
Perforated holder filled with Maccaroni pieces –
1/8 × 1/8 – pound full –
Squeezed from a die –

plate to increase the surface



See how small a hole will or can be used on a hysterotomy tube at the jar,

Try PbO_2 Hydroxide
30% graphite – Delaunde –

Put Takaki's friend on Delaunde –

Monochloride Copper
* a Chloride as an Electrolyte ~~X~~ it decomposes NaCl to reduce
Cull to Metal
Cu_2Cl_2 = as it deposits
NaCl better found on Electrolyte
it will not deposit in its sol – KCl also

Make disc Carb Cu
+ vomit till it goes
black should be porous
May want Na_2CO_3

Carb Soda throws down
from Cu salts, Carb Cu
which on heating
turns black

Form pure Cu sulphid
by melting - then
Roast, to CuO if OK
make plate with
NaCl + cast tender
Roast,

Powders CuO plates
Fluorspar
Aluminum hydroxide
Chl Lime 806° C
Fluoride Lime 902-1330
Acetate Cu 240° decomp
$CuCl_2$ 498° C
Fluoride Cu Cu_2F_2 908° C
Iron Salts
Chl Lead 447° C
Monoxide Lead 630° C
Pyrophosphate Lead 806 C
Chl Magnesium 708° C
Fluoride " 908° C
Carb Pot. K_2CO_3 860-898
KCl 740-800° C
Chloride Ka 740° C
Bichrom K 400 C
K Fluoride 789 - 885
Carb Soda 849
Na Sulfate 860-897
$SrCl_2$ 796-854
Zn Acetate 242° C
Zn Carb - 300° C
$ZnCl_2$ 365° C

[121]

St Acetate ~~Ba~~ Iron acetate
Ba acetate " Ni "
Zn fluoride 734°C
Zn Sulfate 400 Dec

Fred Ell – got some Cellulose
Cutter: Cylinder & roof of
Can be open in hot moulds
so walls are even –
& surface smooth –

Have a reinforced plate
made nickeled iron frame
1" mesh for CuO plate
put in Cylinder.

CuOH/2 pump 3% Bismuth
10% Cermm – 20% aluminum
20% ~~Magnesium~~ 1% Silver
20% Zinc
Barium – Calcium –

Possibly can produce CuOH
plates in Crude pyrosulfite
target & oxygen that is any
using Metal to open high
MP.

Find a binder which at
3 or 400 degrees melts
& binds plates together
on Cooling & reaction
NaOH. The CuO dont
need more O of powder
properly burnt in forest
plates, Could heat to 400
600 in iron moulds –

Get a sample of
Lollerkeny made in
Type 0 & C at the National
Carbon Co Cal –

Also ~~send~~ sample of
Cracked plate ~~fine or~~
Large & Curved plates

3 Copper bands around plate see how acts in Sol with Cement,

Holland says his forks gives 517.3. I don't ~~believe~~ it as it don't check with my Columns & way off

McChesney - Pickside plates subject to great heat ~~use~~ discussed here are are making ~~new~~ clearances every time —

Take Holland's 517 - & go in hall way & test all the tunnels for Volume & Vibration of sec clock

See if all Vibrating Scalions of the tunnels same size in diam or dimensions

See if can get some dry Silicate Soda for Carbolic Monolithing of just a little

See if the Blue Cu Sol of NaOH, will plate over from a Copper anode onto a black CuO plate Cathode or Sol strong with Tartaric acid

See if the Copper reduced by Lime can be burnished over black CuO plate, also formaldehyde solution

Silicate Soda + a lime record hardened by the Silicate like Keenans plaster, or powders

How about making plaster Paris from equiled Sulphate lime

Plaster

Sulphate of Cadmium unites by fusion with Chloride of Barium & yields a jorony water liquid which solidifies to a milk white mass —

Sulphate of K & probably Na unaltered Alkali
Magnesia & Sulphur
MP bright red

Sulphate Strontia & Equivalent quantity Carbonate Soda
gives easily fusible mass which on cooling gives white mass Dissg

10 water Sulphate Soda may be used instead by baks to anhydrous Na SO4

2½ oz oil per cell
500 amp hours cell
& others.

No Obs No 3 Cryptolyzed Cu(OH)2 which gave about .80 Vol 100 mil amps 8 hours was not half used up. Weight of reduced metallic about 400 mlg weight of unacted on plate then Cu(OH2) = 1.0230 grams, not more than 2 grams Could hardly be originally been in pocket

	Sol Cold	Hot
$SrSO_4$ —	0.0114	
Sr phosphate	Insol	
Sr Hydroxide	0.41	21.8
Sr " hydrated	0.90	47.71
Na_2SO_4	4.8	42.5
Na Metaphosphate	Insoluble	
Na Antimonate	0.31	—
Ns $2NaSbO_3 - 7aq$ —		
Fluoride Na	4.0	—
Fluosilicate	0.65	2.46
Perborate Na	2.55	3.78
Borate Magnesia	Insoluble	
Calcium Potassium Sulfate	0.25 cold	
Cerit Cerium	0.002	

Above for CuO plate
Cerites -

Rub over plate + burnish the finely reduced Copper.

Try Silvered formaldehyde
Rubbed on by wet cloth -

Try peroxide Mang hydrox.

Use hot plate try Crystals
Hydroxylamin - Paraaminophenol
6/4 - flour Zinc + Rosin -
phos acid + Zn flour moist,
$SnCl_2$

Graphite very light + bleach out with Copper, see if porous - if not run perforating tool over surface.

Can make a stencil

Leaves a plating like this -

+ no graphite shows, can soak out sal - must be neutral

Carb nickel in ammonia in
Excess deposits a green
Crystalline salt on standing
or evaporation, (12) Ni hydroxid

A Crystalline hydrate has
been found on chromic
ore at Chromite Mines Pa
its transparent Emerald
green color & density
of 3.05 This shows
its possible —

If Can get crystalline
hydroxide the test Li Oft
may be unnecessary

Lithia minerals
Petalite Silicate of Al + Li 5%
Spodumene 8% Aluminate
11% Triphyline 3.9%
Lepidolite 3.6%

Its found in sea water, many
Micas + feldspars

L Ott Double ~~phosphate~~
~~of Li + Na very slight sol~~
you may be getting Metal

Hydrofluosilicic acid forms
down almost insol Lifluosilicate
from Li Salts,

Picric acid precips Picrate Li

Hypophosphite Ni Solution
or Crystals heated to 120°C
deposits Nickel

Ag Ag by CuO plate

Amblygonite [illegible]
Powder. [illegible]
fuse with twice weight of lime
Salt.
Na_2CO_3
Sulphate Soda
NaOH, Lillo Rabb.
Fuse three times and to sulfide by
Charcoal at yellow heat.
Fluosponic H_2SO_4 —
Nitric Acid, Aqua Regia

Boils above with Spodumene

Squeeze
36" long
steel 820 about

CuO platte binding —

Borax MP Red heat.
Sol 2.83 Cold 201.4 Boiling

Carbonate Na_2CO_3 —
7.0 Cold 45 Hot.

Fluoride Na 7. —
4.

Acid Hypophosphate
2.2 Cold — 20. Hot.

Oxalate Na $Na_2C_2O_4$
3.

Di Sodium Phosphate. Na_2PO_4 H_2O
6.3 — 286 Hot

Pyrophosphate Na $10H_2O$
5.4 93. Hot

10 Water Sulphite soda
12.16 Cold 412.1 Ref.

Dried -

Dessicated etc & Chucks other specimens fugged & treated by softening in a non floating mount

Fine specimen well washed with a solution of bichromate potash alum sulphite soda & pressed mount & dried in press on Cam Tricotile, Blotting paper etc -

Dilute soda diluted also -

An electrolytic method of preparing CuO is described by Miller J Physical Chem 1909 278 & Luckow Zeitsch Electrochem 1897 422

Proc Roy Soc 1908 -
Chattaway says that by reduction of fuprid ammonium set by chromatic hydrazine Copper mirror deposited on glass

Conc Sol Cupric ammonium deposits Cu hydroxide They would probably on Crystalum tray

CuO_2 perox action of hydrogen perox on Cupric hydrox in neutral at 0° Cent. Crystalline precip is washed with water Alcohol & Ether & dried in Vacuo yellow brown & decomposes at 180°C forming CuO_2

Moulding Lacas - make a thin Varnish, put in Vac let it set & back up by plaster Paris Etc —
also Varnish let it set then pour in plaster Paris -

Vac Bags, Can with plaster
CuO plates in Crucible
Can run in - If no Vac
Can use Vac bags & plates

perhaps cellulose can be treated poly vinyl
when powder dry
Plates, Carnauba, other
Cement paper, fibre

Feculose a starch Ester formed by action Glacial Acetic Ac on starch - washing product with cold water to free it of acid - By varying the starch used & the time & temperature of reaction or concentration of the acid an endless variety of products may be obtained. Differs but little in appearance from ordinary starch. When a little of the sol is dried on glass forms a clear flexible film equal to that of the finest collodion. Used as substitute for gelatine gum &c. Can be varnish made permanent.

Dec Applied Chem 7
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for hardening Opticians
fused silicates of Na

Hydrothermostasis of K
one of least sol salts of K used as test -

Thermoscopes forms very easily fusible glass with gelatine

Thebel Mould -
fused Silicate of Na
fusing a low temp
pressed hot. for Mosc

5 grams Na Silicate
80# lbs gauge pressure
= 400 lbs dry no
baked 2 hours on hot
plate 20 drops on
kettle at 10" 4 ft rot.
18" —

Various Sulphates Na
broke 10" 1st drop. —

Reg Shake about
same reg. breaks
about Decomp on the
5 grams Silicate Soda

Try Silica, Sand —
Clay — plastic. Dry at
Steam plate + also drill
Red — phosphorus
also dull red,

Silicate Soda 5 grams
Dry in air 24 hours

Silicate Soda Dry in
air in CO_2 gas —

Other Pkg tubes Cost
gas engines on,
also used cond. comm
a thin tube see if other
also use Nitrogen
at one or both ends

Try a bat of Experiments to see
what would slag CaOH to
a compound insol in NaOH

If Silicate Na Coats the
granules, use less of it
say 2½ grams per 100
max batch —

C14U

Run 5% selenite Na up to dull Red
also 2½% of Copper
+ test in battery -

Try mush of Cupric hydroxide, rather stiff baked to hot plate also 400 & also dull red

Try Cupric Ammonium to wet,

Try Acetate Copper + dry hot plate 400 & dull red

Try Silicate Copper

Fluoride Soda & Cu

Dally - after a few more experiments on Coating go back to Vermicelli flock powder & make discs - We get best results from these -

---

$Zn(OH)_2$ in solun KOH but not after ignition make plate with $Zn(OH)_2$ & dry steam plate 400 & ignite + test

---

Try ferrous hydroxide in black it greasy ferric a peculiarly bend

Try phosphoric Boric acid on coke form
Also Also Borate Cu
Probably not sol in NaOH,

In Coke Experiments make a
funnel for smallest Same
Taper so the mouth is
Equal to dia of the
Largest Tube –

Sol. of Zinc dust Cost with
NaOH with Copper Neg
plates, if so dip in
mush of Zinc in NaOH

LiOH, Neutralize the
Electrolyte with CO_2 +
Evap to dry then dissolve

the Na_2CO_3 by hot water,

Also neutralizing by HCl.
Evap + dissolve out
the $LiCl_2$ by alcohol
or Ether — $NaCo_3$ solubleol

Carb Li Li_2CO_3 anhyd
Sol 1.5 – 100 cold 0.78 hot.

Li Sulphate Only sol alcohol
Na " " " Insol –
the water "

Experiment of Fire crack iron
75% CuO burnt powder +
25% $Cu(OH)_2$ Colloid.
freely dry powder wet
Clay is intended the Mixture
Mix 4 moulded + baken
till OK –

C145]

Dammar, fine powder
& equivalent to 12% binder
using alcohol to varnish
block put on block a
day in oven. Represses in
mould & then Reg
Varnish.

Dry Cu(O) plate a Chlorinating
~~bat~~ Hot plate. Hot &
dull red —/

ZnO boiled with a strong sol
of ZnCl in certain proportions
after a while a plastic mass
is obtained which (for a
while becomes very hard
& is used for taking casts

A cement 3 pts ZnO & 1
part powdered glass to
50 pts of a solution of
ZnCl Spec G 1.5 @ 1.6 and
with 1 pt Borax dissolved in
sufficient amount water
is used in Paris for stopping
teeth

An oxychl prepared by a
similar process may be
used as a paint for wood
paper or stone dries
equivalently —

See how much Zinc
NaOH will dissolve
hot. Use the Conc
sol + feed with ZnO(A)

Call Bernardaki on
phone ~~for~~ Salesman
Come over

See how much Cu OH 2 can be got into NaOH strong heated on small Casserole + if Evap to dry if it dissolves in 20%

ditto Metallic Aluminum in NaOH & to dry —

See if strong hot strong NaOH will dissolve oxides of Al — Ca Ba Sr Cu Fe Mg Mn Zn + if so dry given if Sol in 20% NaOH.

Try strong NaOH, 6 ounces dry on hot plate make 2 + 2 more to 6 2 heated bright red —

Dimroddie —
Use Manilla + dissolve in High BP Solvent Naptha, see if sol in hot Straw oil

Dykeman — Dont consider any Metal Contracts —

Ammonia phosphate precips Mn to a Soluble Double Salt,

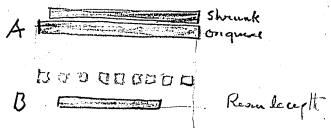
Soak one of the Silicate Na Cu bricks in Chl Calcium + percolate wet the NaCl. dry see if its as strong as silicate alone if So Copper + Run

7/29

Shellac dissolves in ammonia

Temp Hot plate
266 – about

Dimoddie.



If A shrinks say $\frac{1}{16}$ then if B with a carefully reduced length of resin, hope to shrink $\frac{1}{16}$ it certainly will crack

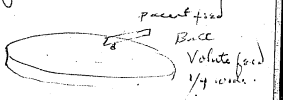
Remedy more Var less 7/x or better, dont harden so much in press, so it will stretch more

2nd = mixed 12 min hrs
2 3 + 5 min –

3rd Use less 6/4 –

4th use same 6/4 and add more free phenol,

Think it will not cut as 75% of surface is 7/x –



6 = Take record out warm

Make Var 1% Para phenol free
Resin same Vary 6/4 –
from 7.9 7 6.15 5 or 4
1% – Blanc 7/x consistent,

Varnish one coat + cure Reg bake – over this put 2 coats Blanc fix reg V without shrink or blacks
Rebake in press
(151)

or. one coat on blanks & bake to 140 in oven down stairs – & then the 2 coats of fix –

Several blanks, using less & less blanc fix –

See if our China melts or softens by heat, if not or only softens substitute it for blanc fix for a trial

Specc Gravities

Sul Barytà	4.4
Aluminum Trifluoride	4.3
" Trioxide	5.5
" Sulfate	4.9
" Pentasulfide	4.1 fusible
Barium Chromate	4.5
" Manganate	4.8
" Oxide	5.3

Bismuth	Oxychloride	7.7
Cadmium	Oxide	4.2
"	fluoride	6.6
"	Hydroxide	4.8
"	Oxide	6.95
Ceric	Ox	7.65
Copper	Oxide CuO	6.3
~~Iron~~	" Cu_2O	6.0
Iron	Fe_2O_3	5.1
Lead	Borate	5.5
"	Bromide	6.5
	Carb	6.4
	Chloride	5.8
	Chromate	6.1
	fluoride	8.2
	Hydroxide	7.6
	Oxalate	5.0
	Monoxide	9.3
	Red	9.0
	Peroxide	8.9
	Oxychloride	7.2
	Sulphate	6.2
	Sulfide	7.1

Tin	fluoride	4.7
"	oxide	6.7
Zinc	fluoride	4.6
"	ox	5.7

~~Try Chromic Wrap's idea also dissolved with Chrome Fix + a rapid dryer put in oven — dry + print without Reg Vars + also weight~~

Boil a Silicate in water also 20% NaOH also just enough acid to neutralize to decomp the Silicate +

Put 6 2½" discs CuO 100 - 5 - Silicate Na in 20% NaOH, in a jar closed to air, at end of 2 weeks clamp after soaking NaOH and half a load to break the other in at end of month break another, then let 2 months after steal flange + break another + so on. Make an extra one to break at once after 2 hours in NaOH. Bake 27°

Then 6 baked to 400 — 6 baked to 600 —

Evaporate Reg silicate in dish + after oven to 266 on hot plate for 2 hours put in 20% NaOH and how long did dry

No 2 disc if as good as Reg plates
581 ~~0~~# 1 amp- should give
687 amp hours. to 1/2 Volt.
Surface is 7.23 times less hence
at 200 m/amp is equal to
1.400 on Reg plates,

Make CuO disc with fine
ground Portland Cement
ditto plaster paris -

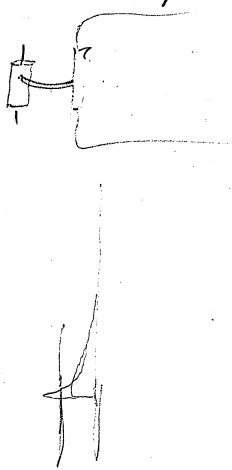
Try 5 4 + 3%
Clay test drop + electric

Make a 1 + 5 Sol Na
+ subject to CO_2 + test
strength after 24 hours
drop + water, etc

Bake 5 Sol Na to
300 400 500 -
+ test in water -
+ Elec

Kangaroo
Yak
Mongoose
Man
Ocelot
Porcupine -
Jakal
Jaguar

41 f.s



C161]

Kg. Dyphocus
Megamantheim
Obari
Iguanna
Gilamonster
Chamelion
Crocodile
Alligator
Caymen
Tasmanian Devil
Gazzele
Hartbeast
Eland
~~Bison~~
Water Buffalo
Chamois
Ass
Mule
Lynx
Hyena
Panther
Wildcat
Lion
Tiger

Leopard
Puma
Monkey
Baboon
Gorilla
Cheetah
Skunk
Rabbit
Panarie Dog
Lemur
Squirrel
Rat
Mink
Otter
Beaver
Fox
Wolverene
Horse
Cow
~~Buffalo~~
Cat.
Mouse
Chipmunk

Squirrel
Llama
Elephant
Camel.
Goat
Sheep.
Raccoon
Muskrat,
groundhog
Hog-
~~Pig~~,
Weasel-
Possum-
Sable
Whale
Walrus
Sealion
Seal
Manatee
porpoise
60

50

Caribou
Elk
Moose
Antelope
Elk
Bear
Muck of
Armadillo
Ant Eater
Wolf
Dog
Badger
Rhinoceros
Hippotomiro
Chimpanzee
Orang Outang
82
Zebra
Giraffe-

550
550
2750
2750
3025

302.5
250

486
109

350
77
2450
2450
2695

28500
77
199500
199500
21945
20000
19430

168
9
5 | 1000
49
288
32
320

2700
360
162000
8100
2000 | 97200
81000
17200
16000
1200

(486

7.7
400
308

3080

62
77
434
434
5774

58

256 | 12000 (46.9
1024
1760
1536
2240

4 | 46.9
2 | 11.7
5.8

3080
360
184800
9240
2000 | 110880
100000
10880

(550